

Modified Milk Ingredients

Milk ingredients are components of milk that have been extracted by physical separation processes or technologies. These ingredients have various functional (emulsifying, foaming, texture, etc.), nutritional or bioactive (beneficial health effects) properties. It is unfortunate, however, that some of these ingredients, which in Europe are called “natural milk constituents,” are termed “modified milk ingredients” in Canada, lending them a pejorative connotation.

Nutritional value of milk

Milk is an almost perfect food. It contains several components of recognized nutritional value. Given this high nutritional value, a number of common, everyday foods are improved by the addition of milk ingredients. For example, the calcium added to orange juice, the proteins added to prepared foods, the nutrients added to sports drinks and fortified foods are all ingredients derived mainly from milk.

Technology also makes it possible to adjust the composition of milk, by modulating the proportions of its natural components in order to meet specific needs. For example, a dairy beverage richer in calcium is obtained by adding milk calcium, previously obtained by a separation process. This type of calcium has the property of being much better absorbed by the human body.

An overlooked resource: whey

Whey is a milk by-product of cheese making. It contains soluble milk proteins, which account for approximately 20% of total milk proteins. The whey is recovered and re-used by means of advanced technologies, thereby avoiding its disposal in the environment; this practice has been used in Quebec for many years. The recovered whey proteins are used mainly in cheese-making, although they are often also used to improve the functional or nutritional properties of other foods.

Canada produces some 372,000 tonnes of cheese annually, including 200,000 tonnes in Quebec, resulting in the production of 2,100,000 tonnes of whey in Canada (1,200,000 tonnes in Quebec). Saputo, Parmalat and Agropur have plants that make value-added products from whey. By means of a filtration process, the whey proteins can be concentrated; they are then termed whey protein concentrates (WPC).

A triple value added

Using milk proteins has a number of advantages.

First, when added to cheese, these proteins make it possible to standardize or enrich cheese milks. This addition also improves several properties of the cheese: more intense colour, richer flavours, better control of moisture content, etc. For example, a mozzarella cheese enriched with milk proteins will melt uniformly and the colour obtained after cooking will be more homogeneous; it will remain soft even if re-heated. When added to yogurts, milk proteins give the finished product a softer, smoother texture. It has also been found that incorporating these proteins in prepared foods results in better water retention, finer dispersal of fats, a more homogeneous texture, and many other advantages.

It has also been demonstrated that certain milk proteins or milk protein fractions have properties that are beneficial for health. For example, the various biological properties of whey proteins and peptides are used to regulate blood pressure, modulate the immune system, facilitate the transport of minerals in the body, etc. Indeed, the Food and Agriculture Organization (FAO) of the United Nations recognizes the great nutritional value of these substances as well as their many dietary and therapeutic uses. For further information, consult the site: http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/T4280F/T4280F0h.htm.

Finally, another factor of no small importance is the fact that adding milk proteins improves cheese-making efficiency. The volume of milk required can be reduced by as much as 3%, which results in a reduction of about 1.5% in the final cost of the cheese. It should be pointed out that milk costs about \$0.70 a litre and that it takes approximately 10 litres of milk to produce one kilogram of cheese. However, it should be noted that the final production cost of cheese can vary considerably from one producer to another and depending on the type of cheese.

A misleading nomenclature

The generic legal term for designating these milk ingredients, obtained by various separation processes (ultrafiltration or other), is “modified milk ingredients.” Health Canada chose this term a number of years ago and decided to include it in the regulatory nomenclature. Unfortunately, this term is confusing and has a pejorative connotation.

As soon as a single ingredient of this type is used in the production of food products, the term includes all the milk ingredients used in the product. The list of ingredients then contains only the term “modified milk ingredients” and cannot specify that the product also contains milk or cream.

This situation is a source of confusion, indeed concern, for consumers, who can no longer determine the true composition of a dairy product containing these substances. Furthermore, it places Canadian dairy product producers at a disadvantage relative to their foreign competitors. In Europe, the much more evocative and accurate term “natural milk constituents” is used to describe these substances.

What is more, simply because the terms sound somewhat alike, consumers often tend to confuse “modified milk ingredients” and “genetically modified organisms (GMOs).” Even though there is no relationship between these two types of substances, this results in an unfounded mistrust on the part of some consumers, who then tend to avoid wholesome products.

For several years, members of the dairy industry have been urging Health Canada to replace the generic term “modified milk ingredients” to avoid any misunderstanding. However, Health Canada has indicated that it is not currently willing to accede to this request. A regulatory amendment would be required, which makes the process much more complicated.

For information

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Act and Regulations

For any information on the Food and Drugs Regulations (particularly section 7.1, Part B, Division 8) and on the Dairy Products Regulations, consult the following site:

http://www.hc-sc.gc.ca/food-aliment/friia-raaii/food_drugs-aliments_drogues/act-loi/e_index.html

Appended document

Excerpt from the current Health Canada regulations